60p

THE Unexplained

MYSTERIES OF MIND SPACE & TIME

130

Miracle cures
Secrets of the ancients
Where is everybody?
The road to Atlantis?
Benson Herbert

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THE Unexplained
MYSTERIES OF MIND SPACE & TIME

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Contents

Extra-terrestrial intelligence
WHERE IS EVERYBODY? 2581
Astronomers now believe that there must be alien life in space – but where is it, and how do we communicate?
Archie Roy

Old New World
A RACE AGAINST TIME 2586
New research shows that highly sophisticated races may have inhabited the 'primitive' world
Roy Stemman

Miracle cures
MAKING MIRACLES HAPPEN 2590
Psychics, saints and God himself are credited with healing the sick – but how far can people heal themselves?
Kevin McClure

Atlantis
THE ROAD TO ATLANTIS? 2594
Deep under the sea around the Bahamas is a curious rock formation that appears to be an ancient, man-made road . . .
John Steele

ESP on test
INVESTIGATOR EXTRAORDINARY 2598
Benson Herbert is a psychical researcher whose work is frequently unorthodox: we investigate
Leslie Price

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Where is everybody?

Are we alone in the Universe? If not, how can we set about getting in touch with intelligent alien races? ARCHIE ROY assesses the chances that we have neighbours and explains how we could start a cosmic dialogue

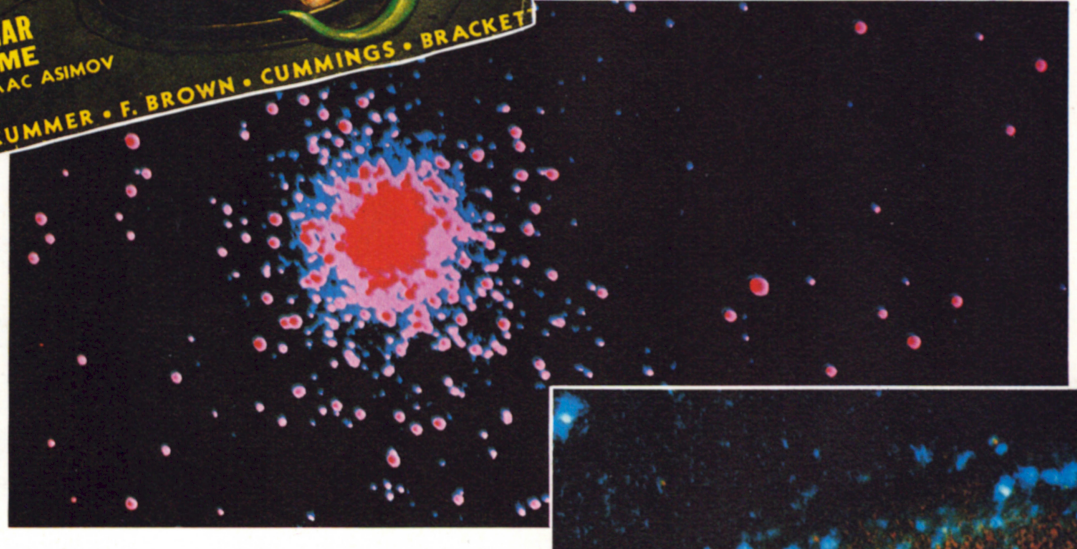
FOR THOUSANDS OF YEARS human beings have looked at the heavens and wondered whether there were worlds out there with life on them. Authors have written innumerable stories in which Earthmen have gone to the Moon or to the planets and found all manner of strange creatures there. Lucian's *Vera historia*, published in the second century AD, was one of the first: the hero is carried outside the Pillars of Hercules (the Straits of Gibraltar) in his ship and is swept up in a whirlwind to the Moon. He finds it inhabited and has all kinds of adventures there. Rather more recently H. G. Wells wrote his famous thriller *The war of the worlds*. Wells was doubtless inspired by the claims of the astronomer Percival Lowell that the planet Mars might well be inhabited by an intelligent race, who revealed their presence by a system of giant canals carrying water from the polar caps.

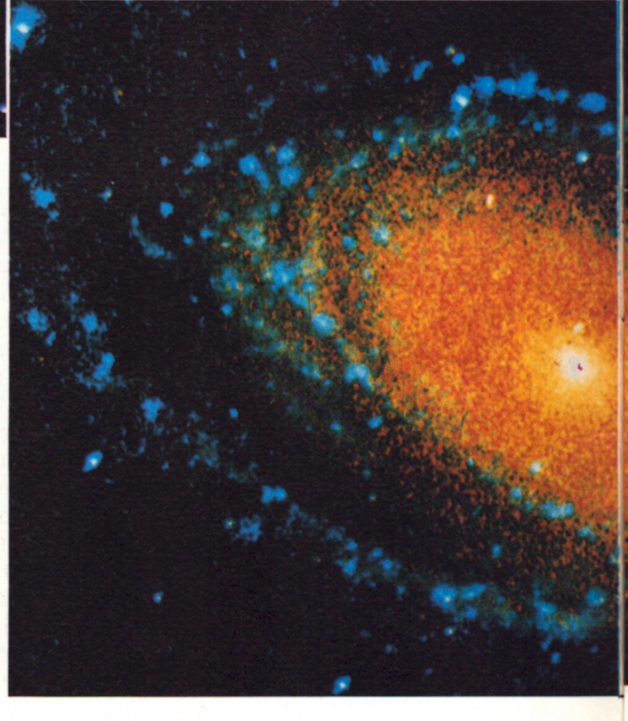
We know now from the explorations of men on the Moon and from a study of the lunar samples brought back by them that not only does the Moon not have any life, but it is extremely unlikely to have ever had any. We also know from the Mariner spacecraft sent to Mars, and especially from the Viking soft-landers, that there is no Martian civilisation and no canal system. If there is any form of life on that planet, it is probably of the most primitive sort. Venus and Mercury and indeed all the planets and moons so far explored bear witness that at least within the solar system the Earth is probably unique in carrying an intelligent species.

Nevertheless Man's fascination with the problem of extra-terrestrial life is undiminished, for, when all is said and done, the solar system is only a tiny part of the Universe. Surely, among the billions of stars scattered throughout the Universe, there must be some possessing planets with life – in some cases intelligent life. And if so, surely some of these species would be interested in exploring the Universe, or at least getting in touch with other intelligent races.

For generations science fiction writers have speculated in magazines, novels, films

Communication with intelligent aliens was first foreseen centuries ago. In *The strange voyage and adventures of Domingo Gonsales to the world in the Moon* (right), published in 1638, the hero was carried into space by bird power. He had conversations of a philosophical nature with the man in the Moon. But we now know that we shall have to look farther afield than the Moon for intelligent life – into the vastness of the Galaxy. The delays in the conversation would be huge: if we sent a radio message to the Horsehead Nebula (below) we should have to wait over 2000 years for a reply to reach us





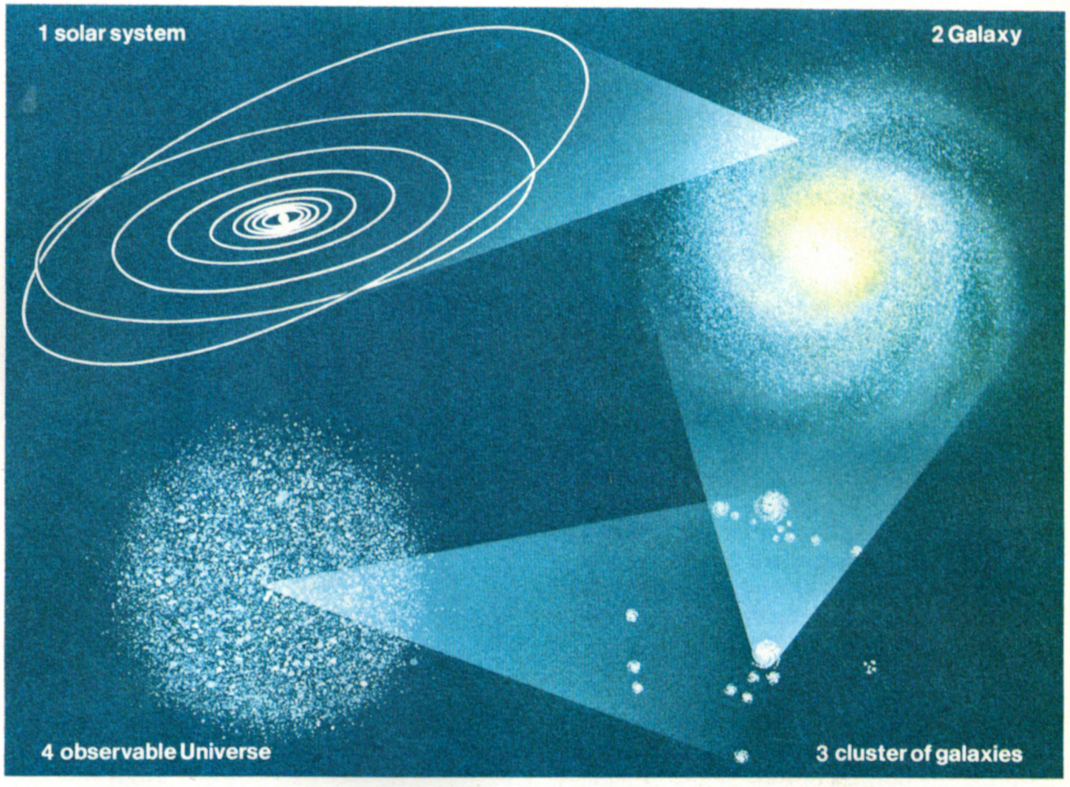
Above: the idea that Man might encounter alien races in space took firm hold in the science fiction boom of the 1950s. Usually they were viewed as terrifying enemies rather than potential friends: *The thing of Venus*, for example, is clearly a threat to earthly womanhood

Above right: this tightly packed ball of stars, called a globular cluster, lies in the constellation Pegasus. This computerised picture accentuates the reddish hue of the comparatively old stars making up the cluster. The orbits of planets would be so highly disturbed by neighbouring stars in the cluster that life would be unlikely to develop on them. But in the immensity of an entire galaxy (right) there may be an enormous number of planets suitable for life

old scientist with a pretty daughter or female assistant with whom his young colleague could fall in love. There would be an uncle/aunt/old friend whose job it was to intone: 'Man was not meant to meddle in such realms' or 'You realise . . . this means the end of civilisation as we know it!' just before he/she was eaten by the monster from 20,000 fathoms/outer space/the centre of the Earth. The human race was just about to be defeated in its gigantic struggle against the menace when the young scientist, no doubt inspired by the pretty daughter/assistant's acceptance of his love, suddenly gasped: 'But is it possible they cannot withstand popcorn/salt water/taffy/the sound of Elvis Presley?' At the end the young lovers were usually seen in a clinch after which the camera would glance over their shoulders at the heavenly backdrop and we would receive the warning, spoken or implied: 'You know, the Universe is a big place. What other horrors may be waiting for us out there?'

What do astronomy and space research actually teach us about the Universe that is relevant to the problem of extra-terrestrial life? They teach us that there are three main astronomical facts of life. It is only by

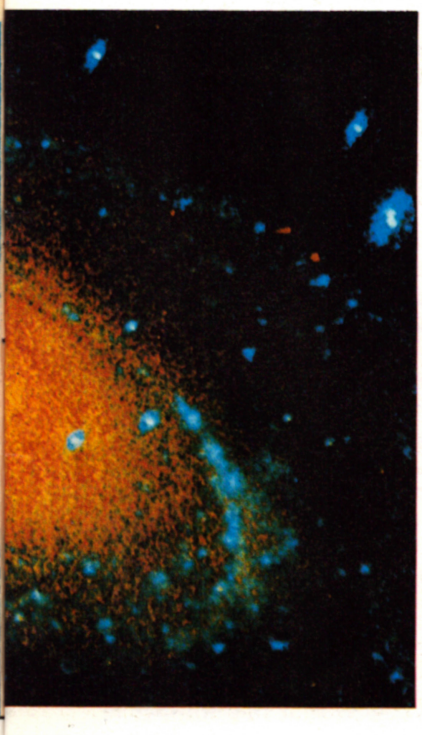
and television on the theme of extra-terrestrial life. Some treatments have been thoughtful and sober, exploring the problems of a first encounter of an alien race with the human race, demonstrating that more often than not, even with the best will in the world, the most tragic consequences could ensue for both. Many such stories have, unfortunately, been mere rubbish – even dangerously misleading – with the authors paying no attention to scientific fact. In the 1950s, for example, a series of science fiction films was churned out, inspired by purely commercial motives. One even had the title *I married a teenage werewolf from outer space*. It had all the most lurid themes in one package – sex, horror, teenage neuroses, and the menace of space. These films used a small number of stock plots. There was usually an



Astronomy's 'first fact of life' – the scale of the Universe. Light takes over 8 hours to cross the solar system (1). It takes 100,000 years to cross the Galaxy, in which there are about 100,000 million stars (2). Galaxies are grouped into clusters typically 10 million light years across, held together by mutual gravitational attraction (3). And the observable Universe is about 20,000 million light years across (4)

considering these that we can in any way discuss life in the Universe sensibly.

The first fact is the size of the Universe. If a scale is taken such that the *known* Universe is as large as St Paul's Cathedral, the 100,000 million galaxies it contains will be the size of specks of dust. The average distance between neighbouring specks will be about half an inch (1 centimetre). If we choose one, our Galaxy, and imagine it expanded to the size of the continent of Asia, then we find that it too is made of specks of dust, neighbouring specks being about 300 feet (100 metres) apart. These specks are the stars, about 100,000 million of them. Choose the one that is the Sun and place a penny on it: that penny is the size of the solar system. Now, finally, expand the penny to the size of Asia and the Earth will be about the size of a small house.



The second relevant astronomical fact of life is the uniformity of the Universe. Throughout the known Universe the same chemical elements appear in much the same proportions – about 70 per cent hydrogen, about 27 per cent helium, some two per cent made up of carbon, nitrogen, oxygen and neon, and the remaining one per cent consisting mostly of sodium, magnesium, aluminium, silicon, calcium and iron. The other 80 naturally occurring elements comprise no more than, so to speak, a pinch of seasoning in the cosmic brew. And wherever we go in the Universe the same chemical and physical processes operate: gravitational and electromagnetic fields manipulate objects with their spectral fingers while nuclear reactions act at the hearts of stars, transmuting element to element in ways that the ancient alchemists would envy. Whatever physical processes have happened in our corner of the Galaxy have been happening everywhere and are still happening.

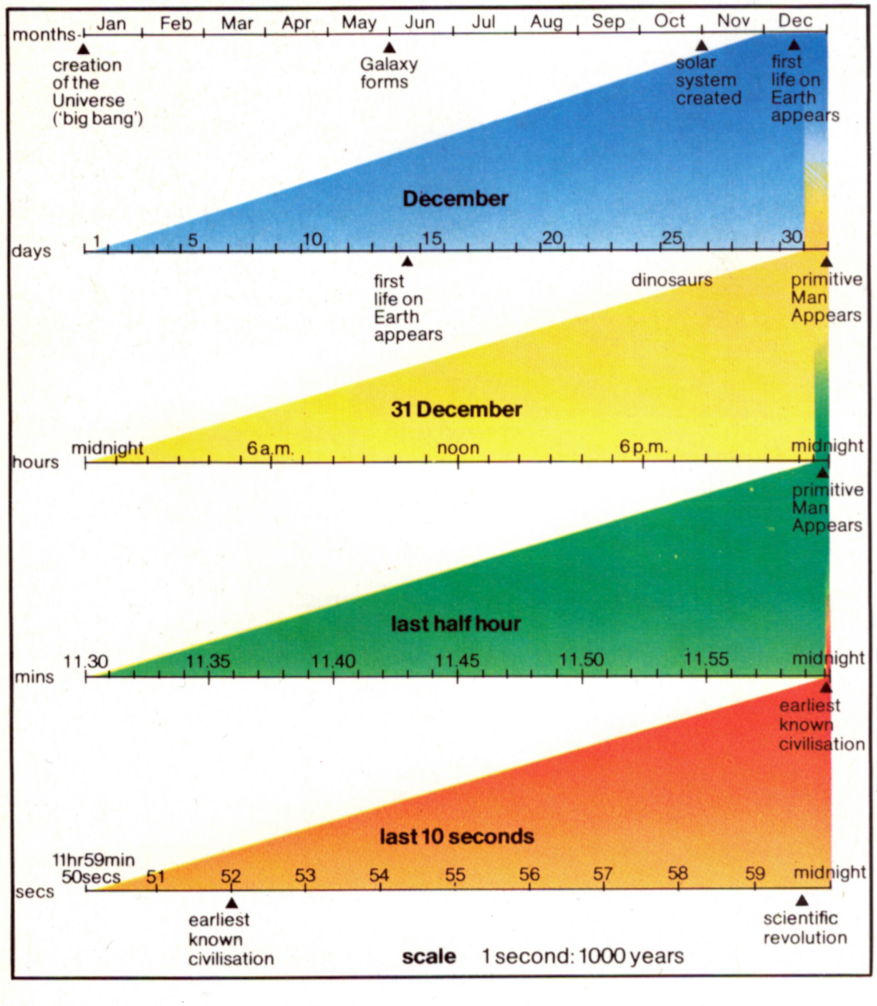
The third astronomical fact important in this context is the age of the Universe. Astronomers now believe that the Universe has been a going concern for anything between 20,000 million and 30,000 million years, ever since it was created in the 'big bang'. Such immense durations, stated baldly, are impossible for the human brain to appreciate. Nevertheless, if we accept the upper figure and take a scale on which a second represents 1000 years, then the Universe is one year old. By the end of 1 January of that year the process leading to our present-day Universe had essentially been completed. By June our Galaxy had been created and by the beginning of November the solar system, including the Earth, was in existence. The first signs of life were appearing on the Earth about 14 December and Man, in much his present form, was beginning to use his primitive intelligence to master his environment about half an hour before midnight on 31 December. Mankind as a species is put into perspective when we realise that the earliest civilisations of which we have any record came into being about 8 seconds before midnight, while the last three and a half centuries of our much vaunted scientific and technological age have occupied the last one third of a second in the year-long history of the Universe.

How many places are there in such a vast Universe where life could survive? Since the only living things of which we have any knowledge are those found on the planet

Earth, we shall provisionally confine our enquiry to forms of life akin to those. That life consists of complex organisms composed of carbon, nitrogen, oxygen and hydrogen, with only one per cent of anything else. And for most of these forms to survive, they must be supplied with water, food and air and be exposed to the correct ranges of temperature and pressure, the right kind of radiation and so on.

We do know, of course, that living creatures have demonstrated extraordinary powers of adapting to widely different environments. Some blue-green algae are found in water at a temperature of 185°F (85°C) while some plant seeds can be taken to temperatures as low as −310°F (−190°C) without dying. The astronauts of Apollo 12 were sent to find out how the instruments of the unmanned spacecraft Surveyor 3 had withstood two years on the Moon's surface. There is no atmosphere there and the temperature in daytime is above the boiling point of water, falling to about −330°F (−200°C) during the night. The explorers found *Streptococcus mitis* bacteria still alive on the television camera. And living things have been found at the bottom of the deepest oceans on Earth, where no sunlight penetrates and the pressure is many tonnes to the square inch.

If, therefore, we confine ourselves to Earth-like planets orbiting Sun-like stars at distances at which the temperature range allows water to exist in liquid form and does not compel it to take the form of steam or ice, we will presumably be selecting suitable places for life as we know it to survive.



The 'year' of the Universe. If one second is taken to represent 1000 years, the entire history of the Universe occupies one year. Mankind makes its appearance within the last half-hour of the year, and achieves a technology capable of communicating with the stars only within the last half-second

At the outset it must be stated that we know of no other star apart from the Sun that indisputably has a planetary system. About a dozen of the nearest stars are suspected of possessing planets but the only methods we have at present of detecting them are stretched to their limits, even to detect planets as large as Jupiter, the biggest planet in the solar system.

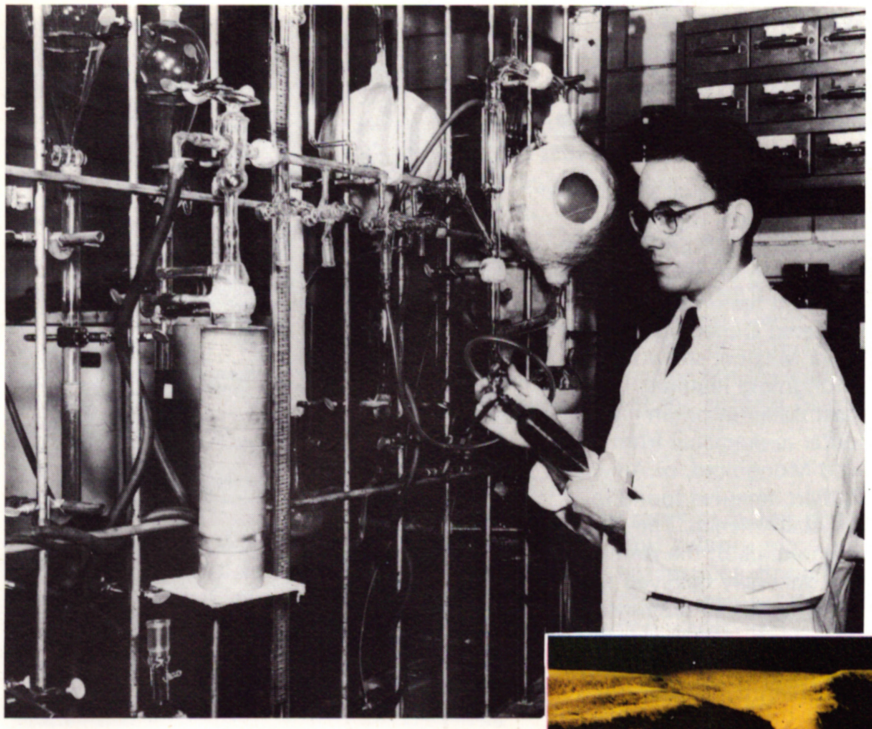
Theories of the origin of planetary systems have increasingly tended towards the conclusion that perhaps some 10 per cent of stars will have planetary systems. Of these stars as many as 20 per cent will be very similar to the Sun. If we go by the proportion of roughly Earth-sized planets in our planetary system, there is about a 30 per cent chance of a planetary system possessing a planet of terrestrial size. It might also be reasonable to take a further 10 per cent of *that* number as those systems in which the Earth-sized planet was at the right distance from the central star to have the right temperature range for the development of life.

Proceeding in this way, we can estimate that in the visible Universe the number of Earth-sized planets orbiting Sun-type stars at about the right distance is about 6 million million million. The question of vital importance is: *would* life originate on any of these hospitable planets?

First steps towards life

At present we do not know the answer to this question. The experiments of Dr Stanley Miller, first carried out in 1953 and subsequently modified and confirmed by many other experimenters, demonstrate that in the atmosphere and surface conditions that existed on Earth before life began, ultraviolet radiation and electrical discharges would have formed many of the amino acids, complex molecules that are the building bricks of life. Miller did not prove that life would necessarily arise in such conditions but he and other investigators showed that the first steps would be taken. In fact in recent years it has been discovered that in interstellar space all kinds of complicated molecules exist, such as formaldehyde and alcohol. Such discoveries strengthen the belief that what has happened in our part of the Universe has happened everywhere else. Nevertheless, it is important to realise that we do not know if life exists elsewhere, let alone whether it is intelligent.

At the 1979 General Assembly of the International Astronomical Union, held in Montreal, a two-day session on the problem of extra-terrestrial life drew large audiences to hear some of the world's experts in the subject debate the matter. In successive papers speakers argued that the number of



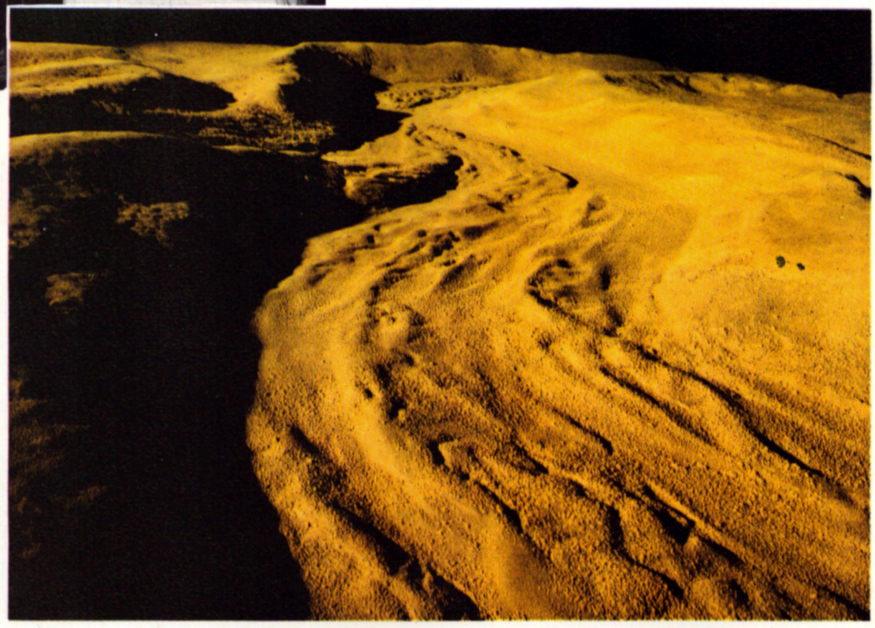
civilisations existing at present in the Galaxy is 1) very small, 2) neither very small nor very large and 3) necessarily *either* very large *or* very small. Each speaker had apparently sound reasons for his opinion.

The only civilisation we know of, namely our own, has already reached the stage where it has sent four products of its technology on their way out of the solar system – two Pioneer and two Voyager spacecraft. Project Daedalus, the star-probe study made by the British Interplanetary Society, has shown that, using technology that is now available or might reasonably be expected to be achieved by the end of the century, we could design and build an interstellar probe capable of voyaging to Barnard's star, 6 light years away, examining its planets. Sebastian von Hoerner has pointed out that the energy already stored in nuclear weapons would suffice to power a ship capable of taking 1000 passengers to the nearest stars. The rapid technological rise of our civilisation began but three centuries ago: in that short time we have come to a point where potentially we can venture out into the Galaxy.

One of the most astounding deductions that can be made is that, once interstellar travel has been achieved, it would take only 10 million years or so to colonise the entire Galaxy! It does not seem to matter very much what values one takes for the various factors in the problem, such as the time of travel of starships or the time it takes a colony to develop to the stage where it can itself send out starships: all calculations end up with much the same figure. Now the Galaxy is at least 10,000 million years old, so colonisation time is only one thousandth of that figure (as 8 hours compared to one year). We also have reason to believe that billions of years ago millions of Earth-like planets should have got to the stage our planet reached just before life appeared on it. If life appeared on those planets, so the argument goes, the whole Galaxy should have been colonised long ago. Extra-terrestrials should be walking the streets of our cities!

Perhaps, for some reason, life has *not* yet got started elsewhere, and we are the first intelligent race to evolve in the Galaxy. If this is so, then we are condemned to loneliness. As a consolation, there is an entire Galaxy waiting to be populated by us.

Some astronomers, such as Frank Drake, have argued that there is an alternative to the extreme views that the number of intelligent races in the Galaxy is enormous or vanishingly small. It is possible that a civilisation would not think the enormous expenditure of resources and energy required to launch colonising ships worthwhile. Or perhaps a civilisation would stabilise its population and use its resources to maximise its standard of life. Or before it begins to explore the Galaxy it evolves to some spiritual level at which colonisation of other planets is irrelevant. Or else it destroys itself, as we seem to be in danger of doing.



Top: in 1953 Dr Stanley Miller simulated the conditions in the primeval Earth's atmosphere. Passing artificial 'lightning strokes' through inorganic chemicals he created complex 'precursor' molecules like those from which the earliest life developed

Above: one of a system of hundreds of channels on the planet Mars, apparently carved by flowing water in the distant past. Liquid water is now absent on Mars; though simple life may exist on the planet, there are certainly no beings advanced enough to hold a conversation with us

And yet, if life has appeared on a large number of planets in the Galaxy over the past few thousand million years, surely some of them, arriving at a high scientific and technological level, would have decided to explore and colonise the Galaxy. And if even one of them decided so to do, in a dramatically short time they should have spread throughout the Galaxy.

And so the question becomes pressing: 'Where is everybody?'

The exciting thing is that today we may well be in a position to find out.

On page 2606: how can we detect alien beings? And can they detect us?

Archaeological discoveries from all over the world suggest that early Man's technological capabilities may have been far greater than we suppose. ROY STEMMAN describes some of them – and assesses their significance

Below: a colossal stone head from Mexico, dating from between 1000 and 500 BC, displaying what appear to be Negroid features; and (right) a seated Olmec figure, also from Mexico, showing Mongoloid features – clearly east Asian in origin – that differ appreciably from the Old Mongoloid, or American Indian, features found in central America. The inhabitants of the Americas are generally believed to have remained entirely free of outside influence – but do these figures testify to the visits of traders from beyond the oceans?

A race against time

MOST HISTORIANS agree that Man, in his present form – *Homo sapiens* – emerged around 35,000 years ago. At the end of the last ice age, some 10,000 years ago, conditions on Earth improved to the extent that Man was no longer constantly engaged in the battle for survival – and could begin to take the first steps towards civilisation.

With this belief as their starting point, prehistorians and archaeologists have put together an acceptable picture of Man's subsequent development up to the present. Acceptable, that is, if we ignore some of the anomalies in the evidence that, all too often, are conveniently left out of the textbooks. To try to make them fit, however, would mean redrawing our entire picture of world history – and few scholars are prepared to do that.

We have to go back five million years to find traces of the earliest Man-like creatures,

in Africa. His development was slow. Gradually, Man evolved into *Homo erectus*, a species of Stone Age Man that lived between 300,000 and 1 million years ago and was widely distributed throughout Europe, Africa and Asia.

The earliest remains of our own variety of *Homo sapiens* – *Homo sapiens sapiens* – have been found in France and are 35,000 years old. The early *Homo sapiens sapiens* could make specialised tools and was taking the first steps towards a civilised way of life. Somewhere between 30,000 and 20,000 years ago this creature, now the only form of Man on Earth, divided into the four separate racial groups that are recognisable today: Europeans, American Indians and Asians, Negroids, and Aborigines.

That view, however, was challenged in 1962 by Professor Carleton S. Coon in his book *The origin of species*. This was based on research that involved collecting and analysing 'every scrap of information and every fossil-man bone and tooth in the world'.

The professor distinguished five basic races that had existed from early times – Caucasoid, Mongoloid, Congoid (Negro), Capoid (Bushman and Hottentot) and Australoid – a classification with which most scientists would concur. But he went on to say that these racial differences had existed as much as half a million years ago. He suggested that the various races developed into *Homo sapiens sapiens* 'not once but five times, as each sub-species, living in its own territory, passed a critical threshold from a more

brutal to a more *sapient* state'. And he gave dates for the point at which each race crossed this threshold – around 250,000 BC for Caucasoids and between 40,000 and 50,000 years ago for Congoids. The implication was that the white race had had around 200,000 years longer as thinking creatures than had the black race.

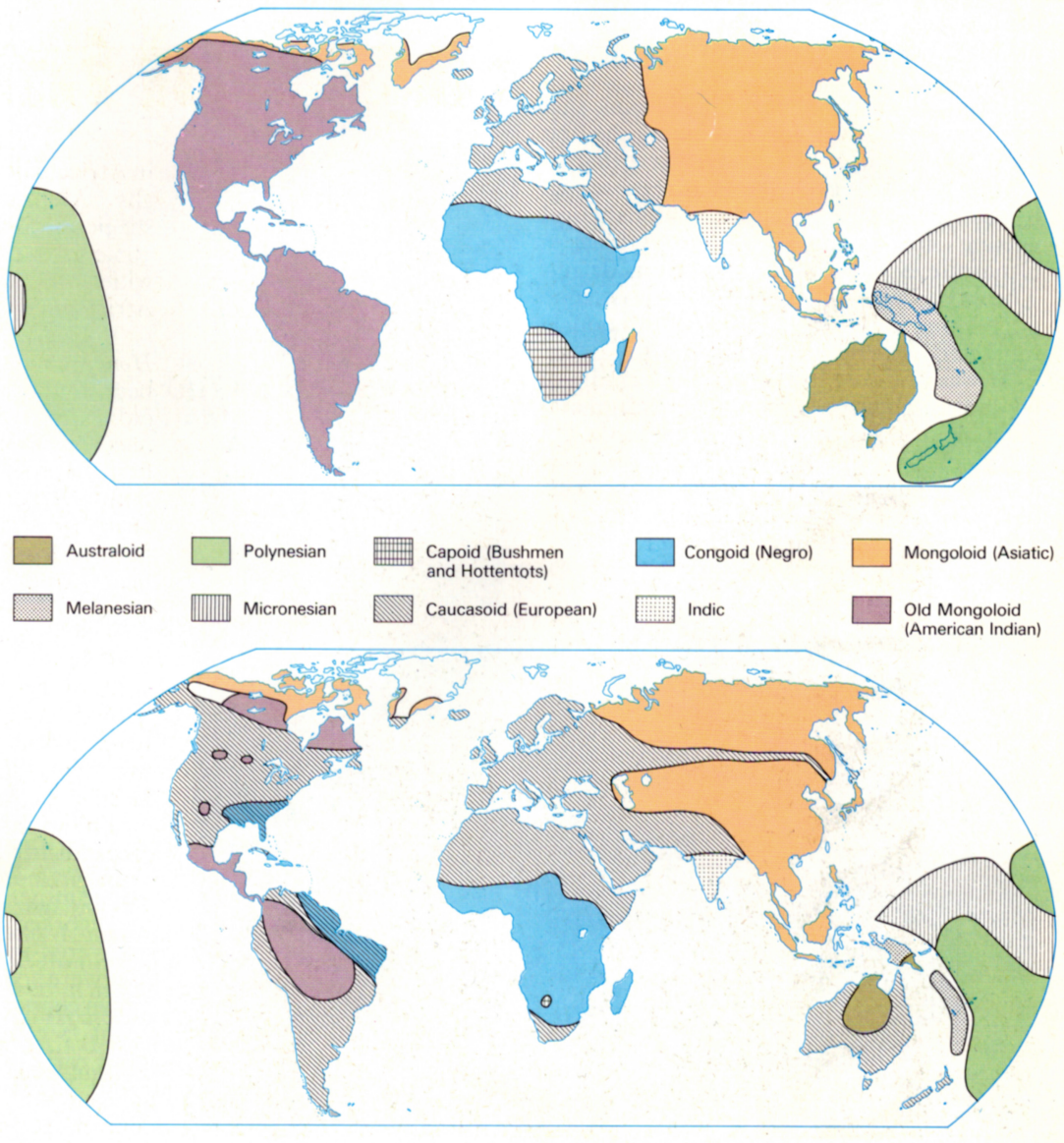
Predictably, Coon's work was taken up by racists to support their views. Coon himself was, in 1964, signatory to a UNESCO declaration on race that states that there is no justification for the concept of 'inferior' or 'superior' races. Whether or not the claim is correct is, however, still the subject of controversy.

Primitive skills

We think of the early races as being primitive, but their skills and talents may have been far greater than we suspect. Somehow, for instance, *Homo sapiens sapiens* arrived in Australia around 30,000 years ago – soon after his appearance in Europe. Assuming that *Homo sapiens sapiens* crossed from Eurasia to Australia, he must have covered considerable distances by sea – even at a time when the sea levels were lower – to reach his destination.

Whether or not this particular hypothesis is correct, it is certainly true that Man learned to navigate at a very early stage in his development in order to trade with his neighbours. And this certainly resulted in the spread of knowledge and abilities in the Old World. But there is evidence for some extraordinary and isolated technological advances that cannot be accounted for by this explanation.

Sumer, in the southern part of Mesopotamia – roughly the area covered by modern Iraq – is generally regarded as the cradle of civilisation. With agriculture as the basis of their economy, small communities had established themselves and adopted a settled way of life in this area by around 6000 BC. Three thousand years later they had developed their own legal system and form of government. They built the world's first cities – 5000 years ago – discovered how to make bronze, used wheeled vehicles and invented a system of writing. In the ancient



Right: a map of the distribution of the races of mankind as it was, it is generally believed, before Christopher Columbus's alleged discovery of the Americas in 1492 (above), and at present (below). The orthodox point of view has it that, before 1492, the races were largely isolated, with very few trade or cultural contacts between the continents. Discoveries of anomalous archaeological artefacts – such as ancient Japanese pottery on the coast of Ecuador – have, however, suggested that the pattern may have been very different

Left: a clay tablet found at the ancient site of Umma, in what is now Iraq, dating from around 2050 BC. Cuneiform script was developed to record lists of items, and is not alphabetic; an early alphabetic system of writing, in which each letter represents a sound (below) was developed by the Phoenicians around 1300 BC

Bottom: part of a disused copper mine and smelter complex at Timna, Israel, whose age has been estimated at around 6000 years – 2000 years older than any copper mine previously discovered

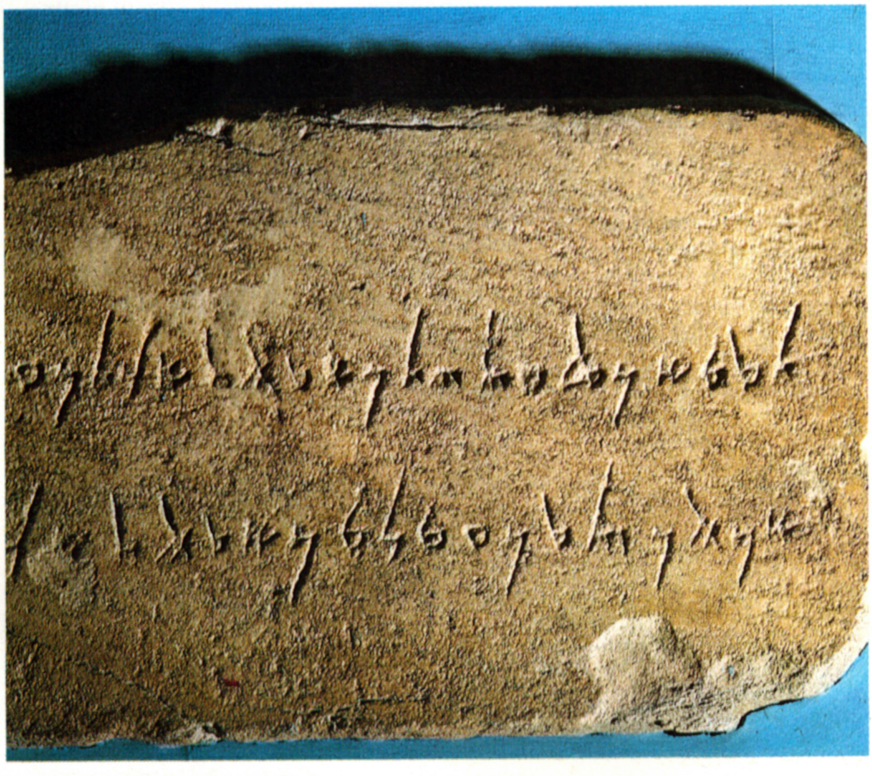
Sumerian city of Kish a tablet of solid limestone has been found bearing the world's oldest example of writing – probably a tax account, written some 5500 years ago. This ancient writing was, indeed, developed to record lists and accounts and is far from having the expressive power of the writing we use today.

It is, however, to the Phoenicians that credit must be given for developing the first form of truly alphabetical writing – that is, writing in which each sound is represented by a letter. The first examples of alphabetical writing are to be found at Byblos, a Canaanite city just north of modern Beirut. The city's origins date back to at least 2600 BC, making it one of the oldest continuously inhabited settlements in the world.

It was not only in the so-called cradle of civilisation, however, that huge cultural and technological advances were being made. On the Black Sea coast of Bulgaria, for instance, 81 graves have been discovered dating back to around 4500 BC. Author Francis Hitching tells of a progress report issued in 1977 describing the contents of the cemetery. In *The world atlas of mysteries* Hitching quotes Professor Maria Gimbutes of the University of California in Los Angeles, who said the graves were '*sensational* for the extraordinary richness in gold, copper, marble, obsidian, flint, various semi-precious stones and Aegean shells, as well as in their technological achievements – including graphite and gold-painted ceramics'.

And these impressive artefacts, as Hitching observes, belong to 'a time when the technological achievements of man are generally characterised by a variety of stone tools, mud or wooden huts, and simple earthenware pots'.

Those buried there were of the Karanovo people, who clearly lived prosperous lives. The most impressive grave was that of a rich man buried with a profusion of gold jewellery. He wore three golden necklaces, had three huge gold arm-rings on each arm, and two golden earrings as well as other items of gold jewellery.



But evidence of skill in metal-working and mineralogy is to be found not only in the hand-made objects that were buried with the dead thousand years ago, but also in the ancient mines that yielded the metals.

In 1977 Professor Beno Rothenberg, director of the London-based Institute for Archaeo-metallurgical Studies, revealed that copper mines and copper smelters that were first worked around 4000 BC had been discovered in both Israel and Spain. These finds were 2000 years older than any previous known copper mines, and, said the professor, meant 'a complete revolution in our ideas about early mining technology'.

But Hitching goes on to reveal that in Swaziland, archaeologists Adrian Boshier

and Peter Beaumont have found evidence of ochre mining that is much older. Experts from Groningen University in the Netherlands conducted carbon dating tests that demonstrated one mining complex to have been in active use from around 26,000 to 20,000 BC, possibly having started around 40,000 BC.

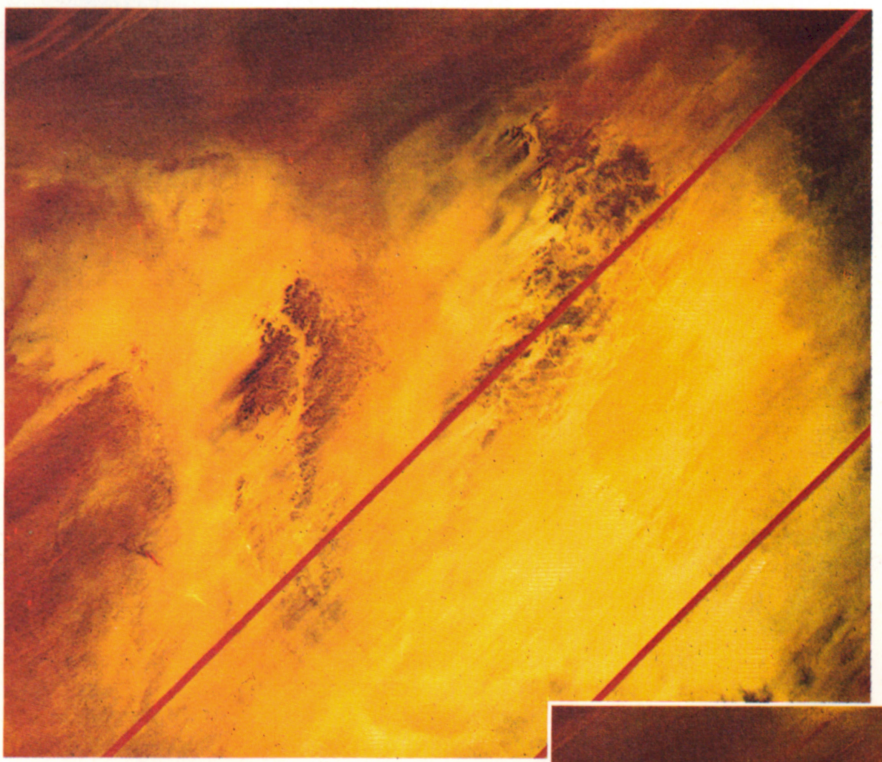
The age of notched bones in another mine was estimated at between 50,000 and 35,000 years, indicating that Man was able to count in a fairly sophisticated fashion at that time. The two scientists say they were forced to conclude that the 'true age of the onset of mining in Swaziland is more likely to be in the order of 70,000-80,000 BC.'

Early Man's advanced metal-handling techniques are also puzzling. Platinum, for example, requires a temperature in excess of 2500°F (1550°C) to melt it. Yet pre-Incan ornaments made of this rare metal have been found in Peru. How did their makers manage to achieve such high temperatures?

Aluminium is a common enough element: it is the third most abundant on the Earth's surface and forms 7.45 per cent of the Earth's crust. But its existence was not recognised until 1809, and it was another 16 years before the element was successfully isolated. The electrolytic process – for breaking down compounds into their constituent parts by applying an electric current – was developed in 1886; in the electrolysis of aluminium, pure aluminium oxide is dissolved in molten cryolite containing a little fluorspar, and electrolysed using a carbon cathode and anode. This process requires large amounts of electricity.

A report by Rene Noorbergen in his book *Secrets of the lost races* says that a metal belt-fastener with open-work ornamentation has been found in China, at the burial site of the Chin dynasty general, Chou Chu, who lived from AD 265 to 316. Analysis of the metal apparently shows it to be an alloy consisting of 5 per cent manganese, 10 per cent copper and 85 per cent aluminium. Modern aluminium separating techniques use complex electrical processes requiring temperatures over 1550°F (950°C).

Unquestionably, we still have much to learn about prehistory. Curiously enough, our exploration of outer space may give us a new insight into the past of our own planet and our own species.



Below: a photograph of part of the Sahara Desert taken using radar techniques by the US space shuttle *Columbia* in November 1981. These techniques enable the camera to 'see' to a depth of 16 feet (5 metres) and can be used to reveal details of bedrock features and drainage (inset) that are otherwise invisible. They have also revealed traces of primitive roads leading to desert settlements built around 200,000 years ago. The existence of these roads was confirmed by a team of archaeologists who mounted an expedition to the Sahara in the summer of 1982

Secrets from space

Radar pictures taken by the US space shuttle *Columbia* have revealed Stone Age camp sites and huge hidden river beds in the Sahara. The space shuttle took the photographs during its orbits in November 1981 using a newly developed technique that enabled its camera to 'see' through the sand to a depth of 16 feet (5 metres). They found traces of primitive roads leading to the settlements in the Sahara, built around 200,000 years ago. To check the validity of the pictures, scientists went to North Africa in the summer of 1982 and dug in the sand. Their finds confirmed the accuracy of the radar images. In a report published in *Science* at the end of 1982, the team involved put forward the theory that, although the climate of the Sahara dried suddenly around 2 million years ago, creating desert conditions, there were three subsequent periods when it received enough rain to permit human habitation – around 200,000, 60,000 and 10,000 years ago.

Further research may reveal more of these intriguing anomalies. But even what we know already is enough to indicate that our picture of early Man may stand in need of substantial revision.

Further reading

C.W. Ceram, *The first American*, Harcourt Brace Jovanovich (New York) 1971

Carleton S. Coon, *The origin of races*, Jonathan Cape 1963

Francis Hitching, *The world atlas of mysteries*, Pan 1978

Does praying to the Virgin Mary or a saint actually effect a 'miraculous' cure – or are there more down-to-earth explanations for such sudden releases from serious illness? KEVIN McCLURE investigates

Right: the raising of Jairus's daughter, by G.P. Jacomb Hood (1857–1927). Christ's miracle cures were usually accompanied by thought-provoking statements; in this case 'the maid is not dead, but sleepeth' has been taken by many to mean that the girl was in a coma, but could mean that Christ did not see physical death as irreversible

Making miracles happen

WHEN FACED WITH an illness over which we have no immediate control we tend to worry, perhaps even panic. This is a perfectly natural reaction and the more critical the pain or the malady we know we have, or believe we have, the more fervently we wish it would pass. And for many of us, that wishing is but a small step from praying, in the belief that if we do so some external agency – our guardian angel, God or one of the saints – will put an end to our suffering. These articles examine what, if anything, that agency may be.

One of the possible outcomes of being ill is that we recover; another is that we die; a third, covering the majority of cases, is that we come to terms with the illness, mentally and physically, with the help of medical treatment and our own natural resistance, inherent in the human body. In the case of serious – even apparently terminal – illness, few doctors will deny that a small number of their patients experience temporary periods of remission. In some rare instances they acknowledge that the remission can be sudden, and lasting. Sometimes the body seems to mend in just a few days or perhaps hours, even where it has been broken down by some form of cancer, for example. Remission is not a fantasy, or a rumour, or even a matter of misinterpretation of the facts; it happens.

Below: the 'miracle healer', five-year-old Linda Martel, being treated by Harry Edwards. Although she died in 1961, she is still credited with healing powers – as are her clothes and even her grave

Bearing in mind our natural tendency to wish away our illnesses or pray for release from them it is hardly surprising that sometimes remission coincides with our most fervent prayers, or a more sophisticated form of attempting to secure divine intervention, for example the petitioning of a religious figure such as the Virgin Mary, or visiting a place of pilgrimage, like Lourdes. But had the prayers remained unsaid, the Saint not been called upon or the pilgrimage not undertaken, might the remission – be it temporary or permanent – have happened anyway? There is no satisfactory way of telling.

Yet the tradition of healing persists, and in the West it persists particularly as a belief in divine intervention, whether or not a human agent such as a priest or a healer is involved. And in cases where healing is apparently brought about by contact with religious objects such as relics or by visits to shrines or places of pilgrimage, the divine influence is said to be 'direct'.

The Roman Catholic tradition of healing,

Above: High Mass on Ascension Day in Chartres Cathedral, France, in 1981. The sick of the diocese gather to be blessed and – although the blessing is intended to be of a spiritual nature – there are few present who do not hope for a miracle cure of their physical ills

Right: in Miami, USA, hundreds of eager would-be believers crowd round a tree – the bark of which was said to have restored the sight of a 92-year-old blind man. But perhaps the very will to believe stimulates our natural self-healing gifts

which will be considered in greater detail in the following article, is undoubtedly the greatest repository of varied and vociferous claims for divine healing in the modern world, and healings that have apparently taken place within that tradition have given their title to those claimed in many others. Thus, the oddest and most unlikely healings are given the general title of 'miracles'.

The evidence for alleged miracle cures outside the Roman Catholic Church is often skimpily investigated and therefore lacks real credibility. But the reports of such cures continue to be filed throughout the world.

The *Shorter Oxford English Dictionary* defines a miracle as:

> A marvellous event exceeding the known powers of nature and therefore supposed to be due to the special intervention of the Deity or some supernatural agency; chiefly an act (e.g. of healing) exhibiting control over the laws of nature, and serving as evidence that the agent is either divine or is especially favoured by God.

George Bernard Shaw, on the other hand, in his play *St Joan*, chose to describe a miracle as 'an event which creates faith'.

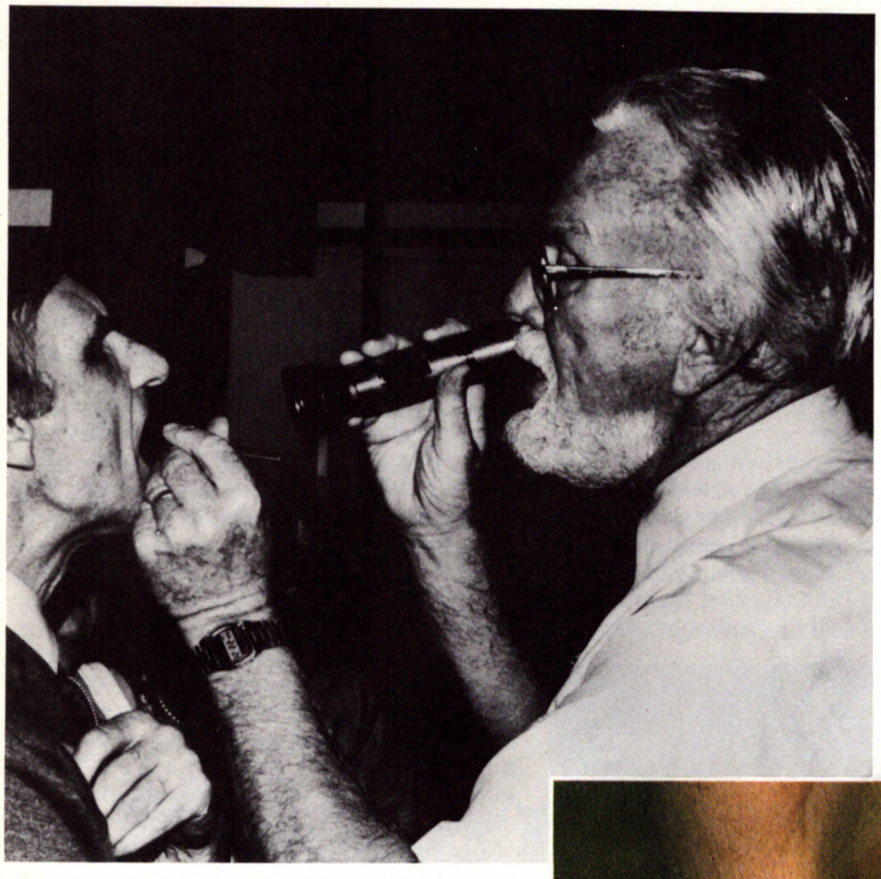
Both of these definitions apply to the healings of Sathya Sai Baba (see page 235), the Indian mystic who is widely respected in both the West and the East. Many of his followers regard him as being a manifestation of God in this age. But even if we ignore such extreme claims, Sai Baba has impressed those who have witnessed his 'miracles'.

His most spectacular healings have been two cases where he is said to have brought the dead back to life; of the two, the most widely reported was his raising of V. Radhakrishna, aged 60, at an ashram at Puttaparti. There was no question in this case that the man was dead, for he had already begun to decompose when Sai Baba raised him to life, three days after being pronounced dead by doctors.

This is as direct an example of a miracle cure as one can expect to find; it is either true or not. If it is false then many people have been duped. But Sai Baba's record of producing other miraculous phenomena – such as 'apporting' hot food or 'sacred ash' – makes even raising from the dead more credible. Yet, as with many of Christ's miracles, there seems to be an obvious question left unanswered – if Sai Baba was able to revive the man from the dead, why did he permit him to die in the first place? What possible benefit could three days of widowhood have for the man's wife? Does it become more of a self-promoting trick than a miracle in this context? The glib theological answers – that God's purpose is subtle but sure and that miracles make us 'glorify the Lord' – do not seem to help much.

Miracles of little Linda

Certainly much simpler and more straightforward in their motivation were the miraculous cures associated with Linda Martel, a hydrocephalic child who spent her short life in Guernsey, dying aged five in 1961. At the time of her death the media were full of stories about her supposed cures, but gradually her name has faded into comparative obscurity, being remembered only by her family and – presumably – by those whom she cured. During her few years Linda, who also suffered from spina bifida and whose legs were paralysed, showed herself to be very advanced intellectually, and often her most perceptive remarks were deeply religious; she would, for example, speak of '*my* Jesus Christ' with a conviction that seemed to smack of experience, yet her family was not particularly religious, and unlikely to have inculcated such an attitude in her. And, like other leading healers, she seemed to have had some power of diagnosis, as well as that of healing; but such a small child is highly unlikely to have learned the skill of diagnosis



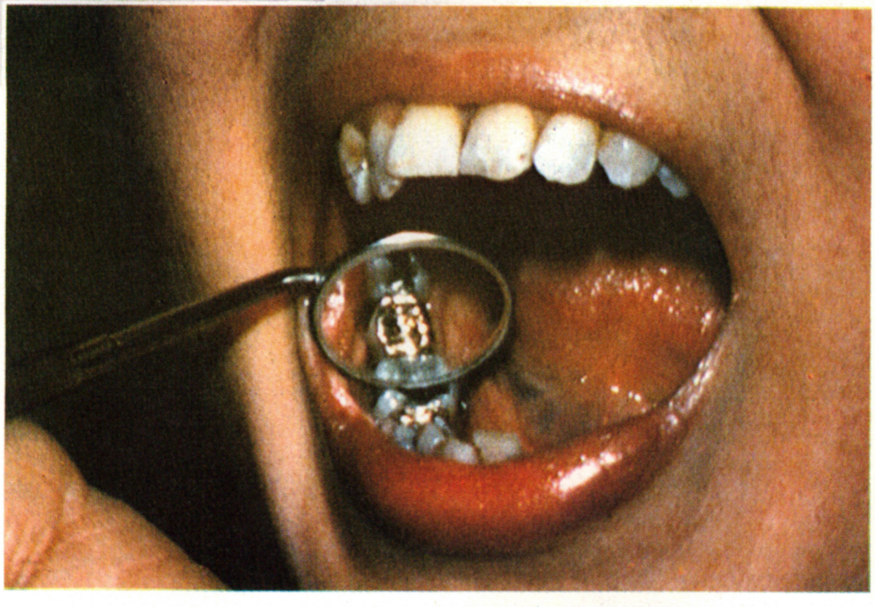
in the conventional way, as might an adult. Her healing was occasionally direct, but more often affected by the sufferer touching an item of clothing that Linda had worn. Such healings are reported to have occurred both before and after her death, and the illnesses and problems cured are said to have included a spinal injury, haemorrhoids, eczema, warts, cartilage trouble, and cancer of the throat. And a multitude of such cures were claimed in the years following her death.

In the case of Linda Martel, one must conclude either that those who claimed to have been cured with her direct or indirect help were deceived or deceiving – or that the cures were genuine. Healing by the power of the mind – by faith – no doubt accounted for a great many of the claims: cures were even attributed to her grave. But if the claims regarding the curing of spinal injuries or cancer are genuine, then we must start considering what 'miracle' means in this context. Could such a small and helpless child have the power to heal of herself, and to impart that power in some way to the clothes she wore, or was some external power working through her, so that those who associated themselves with her simple and naïve faith in Christ could benefit from his legendary healing powers? It is not an easy case to assess, but at least we do not have the suggestion of self-promotion that springs to mind in the cases connected with Sai Baba.

There is something compelling about some of the claims made for Linda Martell, despite the lack of verifiable evidence. And there may have been genuine miracles in a few of these cases. Yet there is an American case, of some fame, in which there is both photographic evidence and abundant personal testimony that, though it fits the definition 'miracle', and undoubtedly concerns cures of a kind, many still find absurd and unacceptable. This concerns the healing ministry of Willard Fuller, a former Baptist minister with a marked evangelistic style.

Initially, he healed all kinds of ailments, but one day a man whose ulcer he had cured came to him and said: 'Preacher, I have one cavity in a tooth back here. I believe that if God can heal an ulcer, He can fix this cavity for me. Will you lay hands on me and pray for me for the meeting of my dental needs?' Fuller did so, and the tooth was, apparently, 'miraculously' filled. To quote Bryce Bond in *Alpha* magazine:

> Those who have seen a filling gradually form describe it as a small bright spot which becomes larger until it fills the whole cavity, like the speeded-up picture of a rose blooming. Porcelain fillings are common occurrences and are of particular interest because they form fast enough for witnesses to watch the growth, but slow enough to give many people a chance to witness at first-hand what is happening. . . . Today, conservatively, there are some 25,000 people in America who have evidence of this 'miracle in the mouth'.



Top: American 'psychic dentist' Willard Fuller, a former Baptist minister who has devoted his life to curing dental ailments by purely spiritual means. After the initial inspection of the 'patient's' mouth, Fuller prays, and within minutes fillings – and sometimes even new teeth – appear (above)

Further, the minister of a church where Fuller appeared in 1967 reported: 'Right before our eyes, teeth have been filled with gold, silver and porcelain – not just one night but every night. Over 200 people have experienced this miracle in two weeks. Last night one man received seven silver and two gold fillings. This is done in such a way that there can be no doubt.'

Many apparent healings have a natural

cause, and demonstrate no more than the exceptional potential of the body to heal itself in the right circumstances; many healers, such as Rose Gladden (see page 1754) and Matthew Manning (see page 1554), recognise this, whatever they claim as the source of their healing powers. But there can be no argument about teeth that suddenly fill with gold, or silver, or even porcelain; it is a remarkable event that defies explanation. Yet its very banality – after all, there are plenty of dentists in the USA, and presumably they all know how to fill cavities with a variety of materials – seems to argue against any sort of direct divine intervention in Willard Fuller's 'miracles'. Many people wonder why the Almighty should fill the teeth of fortunate Americans while leprosy – and worse – rage unabated in the Third World. If Fuller has this power, then it could be argued that it must be his, not God's. Or, if it is divine in origin it seems to point to a whimsical deity, something of a cosmic joker (see page 694).

But healers do not always concentrate their powers on the poorest or the sickest – in this light, it is worth mentioning Dzhuna Davitashvili, the Soviet healer who is said to have done much to sustain the late President Brezhnev during his prolonged last illness. The *Sunday Times* of 29 August 1982 reported that

> the healer's credentials include testimonials from high Soviet officials, stage and literary celebrities and numerous distinguished foreigners who have written thanking her for curing stomach ulcers, hernias, double pneumonia, kidney ailments and malignancies.

She heals by the laying on of hands, which apparently gives patients a sensation like a mild electric shock and, although a Christian, she does not appear to claim that she is working miracles on those she treats. But then, perhaps in the Soviet Union discretion is the better part of valour.

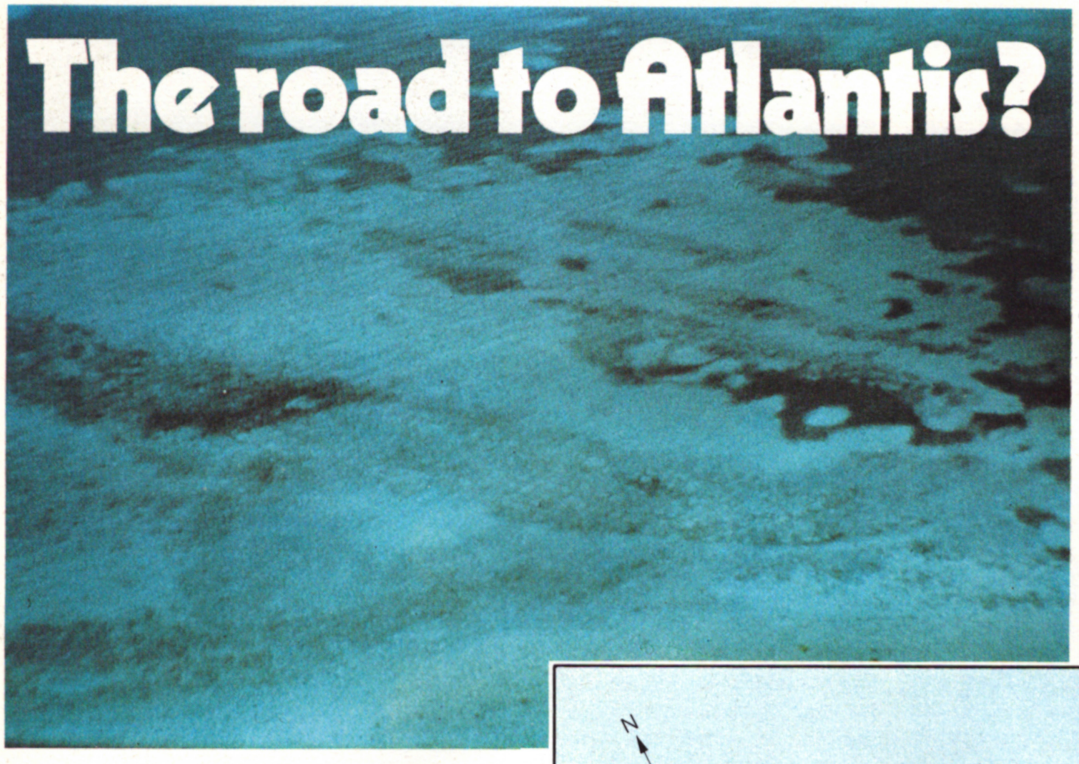
With so much research yet to be done on the nature and process of healing, it is surprising that those established churches that claim to demonstrate the power of God through healing by, in fact, ordained priests, have no clear idea of the nature of the gift. In the early 1980s there was a debate about healing in churches in the *Church Times*, the Anglican newspaper that one week gave an excited account of the healings that took place in a Bristol church – yet only a short time later printed the warnings of another writer who said: 'Beware! For Satan himself masquerades as an angel of light. Not all healing is good and in Jesus' name; but happily there is the gift to distinguish between Spirits. Satan can "heal", and he does.'

Does one have to believe in divine intervention to be a healer? See page 2614

Right: the Soviet faith healer Dzhuna Davitashvili wires up a patient to determine the strength of his 'bio-field', a scientific version of the mystic's aura. The healer has been credited with prolonging the life of the late President Brezhnev – but, perhaps because Dzhuna is a Christian, she does not claim she works miracles

Below: the miracle of Flamengo – when Djalma Teixeira de Oliveira took her first steps ever, during the mass celebrated by Pope John Paul II in his visit to Flamengo in Brazil in 1980. Djalma had been paralysed for years, but it seemed as if her faith had made her whole

The road to Atlantis?

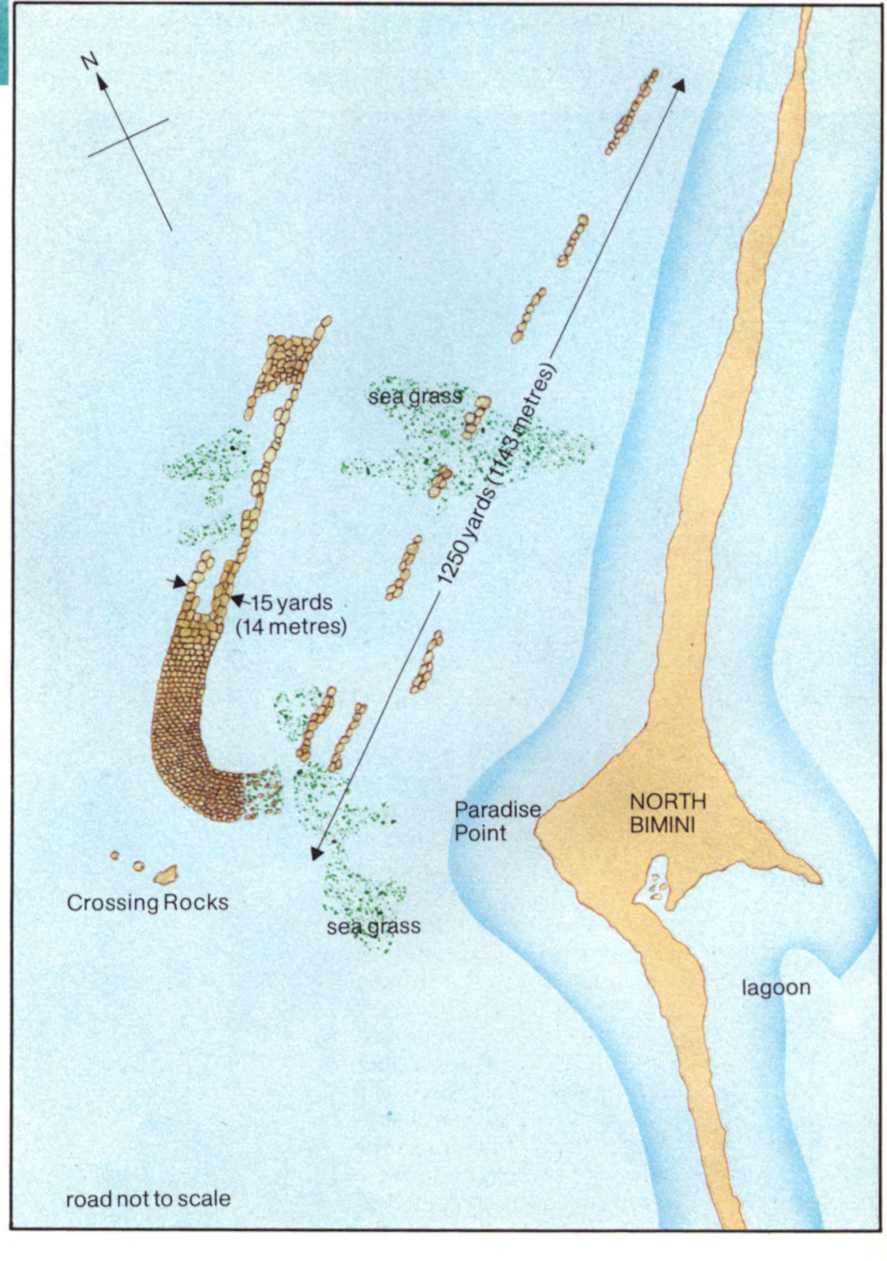


Left: the so-called Bimini road, a structure of huge blocks of limestone apparently artificially hewn, that lies under 20 feet (6 metres) of water north of Paradise Point on North Bimini (below). Carbon-14 dating has indicated the age of the blocks to be between 6000 and 12,000 years

Classical stone pillars and a huge structure of stone blocks – all apparently man-made – were found in the sea off the Bahamas in the 1960s. Are they relics of the ancient Atlantis, rising again as psychics predicted? JOHN STEELE takes a close look at the evidence

EDGAR CAYCE, the controversial American clairvoyant (1877–1945), predicted that Atlantis would begin to rise again in the Bahamas. In 1933 he said that 'a portion of the temple of Atlantis may yet be discovered under the slime of ages of seawater . . . near what is known as Bimini, off the coast of Florida.' In 1940 he stated, while in a trance, that Bimini would be among the first portions of Atlantis to rise – in 1968 or 1969. The hypothesis of Atlantis in the Bahamas is the subject of hot debate. It challenges many established geological, historical and archaeological premises. In this article we present the discoveries that constitute evidence relevant to Cayce's predictions.

The first reports of unusual finds in the Bahamas appeared in 1956. A father and son spear-fishing off Bimini at a depth of 60 feet (18 metres) described finding several decorative, finely worked columns standing upright and emerging from the sandy sea bed. Subsequent attempts to locate them were unsuccessful, for the sand is subject to sudden shifting due to the 3–4 knot Gulf Stream current that passes close to Bimini. Two years later Dr William Bell reported that he had found a 6-foot (1.6-metre) column protruding from a base embedded in the ocean floor near Bimini. Luckily he



managed to photograph it before it was reclaimed by the sand.

It was not until Dr J. Manson Valentine began to devote his energies to the hypothesis of an ancient civilisation in the Bahamas that a sustained exploration of the area began. Valentine is honorary curator of the Museum of Science in Miami and veteran of archaeological expeditions to Yucatan in search of pre-Columbian cultures. His meticulous work and research is the primary source of much of the material in the best-selling books of Charles Berlitz. Valentine's premise was that 'if the great submerged plateaux of the Bahamas were dry land in the relatively recent past [a view based on Atlantologist Egerton Sykes's theory that the sea stopped 30 miles (50 kilometres) east of its present margin in 10,000 BC] then their shallow waters might well yield signs of occupancy by ancient Man.' He has tested this theory by carrying out a series of expeditions over a 20-year period. In 1958 he

Right: a fragment of stone found by Dr David Zink between two of the blocks of the Bimini road. The elegant tongue-and-groove construction suggests that it is man-made – but does not, of course, prove that the maker was from Atlantis

Below: a fragment of one of the fluted classical columns found in 1969 by the archaeological explorer Count Pino Turolla off the southern tip of North Bimini. The marble of the columns has not been traced to any known quarry – implying, in the minds of those willing to entertain such thoughts, that the stone came from Atlantis itself

began photographic survey flights between Bimini and Orange Key, a distance of 60 miles (100 kilometres), observing many sea-bottom patterns that strongly suggested human design because of their geometric symmetry.

In the summer of 1968 Robert Brush, a pilot who was flying over the island of Andros, south of Bimini, observed a sunken rectangular structure in the shallow water off the northern tip of the island. Brush reported his find to Valentine and oceanographer Dimitri Rebikoff. When they explored the site they discovered, according to archaeologist Robert Marx, that 'the limestone blocks of which the walls were made were laid with an accuracy not to be expected of recent inhabitants of the area nor of the Lucayan Indians who lived there when Columbus first landed.' These Indians did not build in stone. Within a mile (1.6 kilometres) of this site, 12 more apparent structures were discovered by Valentine, Rebikoff and Marx.

On 2 September 1968, Valentine found what he considered to be the most exciting submarine evidence of a lost civilisation in the western hemisphere. Bonefish Sam, a local Bahamian fishing guide, took Valentine and two companions to see a curious line of rectangular stones covered by 20 feet (6 metres) of water half a mile (800 metres) north of Paradise Point, North Bimini. Sam knew about the unusual stones because the fishing was always good there. Diving into the turquoise water, Valentine was amazed to see two parallel structures, each 2000 feet (610 metres) long, which he described as

> an extensive pavement of regular and polygonal flat stones, obviously shaped and accurately aligned to form a convincingly artefactual pattern. The stones had evidently lain submerged over a long span of time, for the edges of the biggest stones had become rounded off, giving the blocks the domed appearance of giant loaves of bread or pillows.

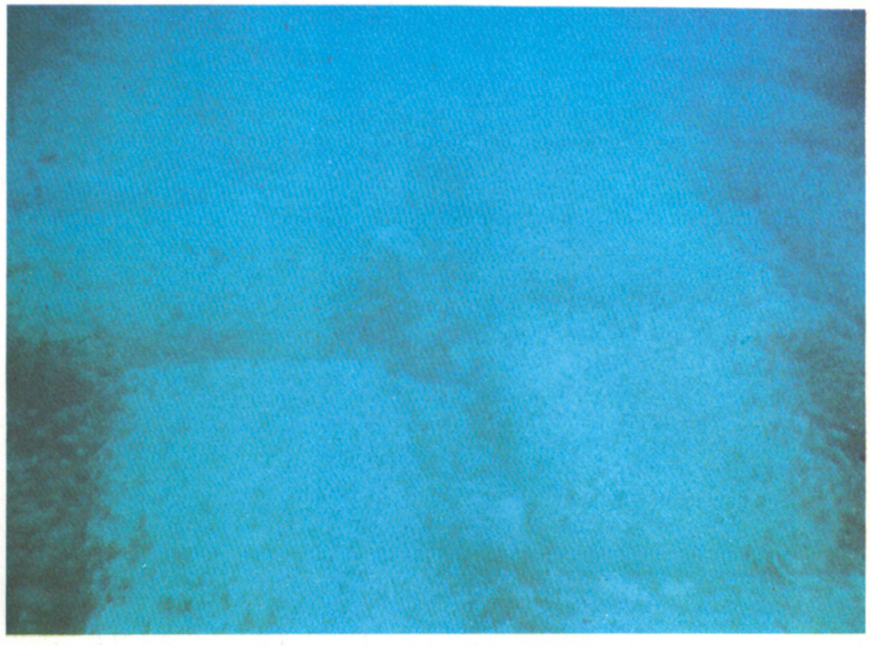
The larger blocks were between 10 and 15 feet (3 and 4.5 metres) square and 3 feet (1 metre) thick. The Bimini road, as the structure came to be known, rests on limestone bedrock. To Valentine, the stone work of the road was similar to pre-Incan megalithic constructions in Peru, and subsequent Carbon-14 dating of plant and animal remains in the blocks indicated them to be between 6000 and 12,000 years old. However, the age of the road could be much greater because the stones are constantly being recrystallised by the high mineral content of the sea water. This recrystallised

material contains an increasingly higher proportion of Carbon-14, making the sample appear younger than it actually may be.

In 1969 Rebikoff, a pioneer of underwater photogrammetric techniques, composed a mosaic of the Bimini road that illustrated hundreds of feet of stonework. A film was also made of the road for French television, introducing the Bimini discovery to the European scientific community. At an informal meeting of archaeologists and geologists, Rebikoff presented a 20-foot (6-metre) long photomosaic of a section of the road. The group concluded that it was a Cyclopean megalithic structure, related to many such megalithic sites found underwater all around Europe and the countries bordering the Mediterranean. In the Mediterranean, for example, many monuments and ports are built of limestone on live rock foundations, in the same manner as the Bimini road. 'Cyclopean' is the term given to ancient walling where the stones are not squared, and originates in the legend suggesting that most of the early stone-walling in the Mediterranean was constructed by Cyclops, the one-eyed giant who figures in Greek legend.

Columns in the ocean

In July 1969 Count Pino Turolla, an archaeological explorer, discovered fragments of fluted marble columns in the classical Greek style, as well as pillars of a concrete substance, off the southern tip of North Bimini. The marble of the columns has not been traced to any known quarry in the world, although opponents of the Atlantean theory argue that the columns and pillars were either cargo or ballast from a shipwreck. While flying near South Cat Kay, Turolla sighted an 'arrow' with a U-shaped base. On subsequent investigation Valentine described it as 'a hundred-foot [30-metre] long artefact built of stones', and concluded that it must have been recently exposed because hardly a trace of it appeared in photographs taken in 1958 – some years later Valentine found a similar but larger arrow formed by a double row of stones.



Above: beachrock off Bimini that has split naturally into rectangular slabs. Opponents of the idea that the Bimini road is a man-made construction point out that these natural blocks are almost indistinguishable from those of the road. However, proponents of the theory argue that the fact that the huge structure (below) runs in a straight line for 2000 feet (610 metres) means that the stones, natural or not, must have been set in place by Man

Valentine and his team have since discovered 30 enigmatic structures in the Bahamas. Some of the most mysterious features are 'long perfectly straight lines reaching sometimes for miles and traversing uninterruptedly all irregularities of bottom contour'. South-east of Bimini, pilot Jim Richardson discovered two such parallel pathways that run into three polygonal holes. When Jaques Mayol explored the sight with Valentine, they found the main cavity to be blocked by large stones.

In 1975 and 1977 Dr David Zink, a scholar of ancient civilisations, a scuba diver and experimental sailor, led two expeditions investigating the Bimini road. The first was a detailed field survey of the road, which resembles a stone causeway and extends almost three-quarters of a mile (1.2 kilometres) in a 'J' pattern clearly visible from the air. It appears to have been rising since its discovery in 1968. Zink found a most unusual fragment of worked stone lodged in the blocks of the road. It was a broken piece of compressed sandstone masonry, unquestionably man-made, with a sophisticated tongue and groove construction, one edge being semi-cylindrical and the other rectangular. No archaeologist, architect or stone-mason has been able conclusively to identify its origin. In 1979 two other pieces of masonry were found. The most elaborately worked piece was found in an underwater cave near the road.

Zink and his team concluded that the 'J'

shape of the road would not have made sense as a road because of the hairpin turn of the great blocks. Neither would it have been a practical construction for a jetty or harbour, for with a few exceptions the structure is only one layer of blocks high, hardly sufficient for a sea wall. Almost invariably, megalithic constructions in the ancient world were used as ceremonial and scientific observation centres – and it is just possible that the Bimini road is part of this megalithic tradition.

There is also a school of thought that believes the Bimini road to be a phenomenon of natural beachrock, such as the one forming in rectangular slabs today off the north-west coast of South Bimini. John Hall, professor of archaeology at the University of Miami, who investigated the stones in 1970, stated:

> these stones constitute a natural phenomenon called pleistocene beachrock erosion and cracking. We found no evidence whatsoever of any work of human hand or any kind of engineering and therefore alas, for those who believe in the old legend, another Atlantis is dismissed.

In 1971 John Gifford, a marine geologist, wrote 'the whole affair of the Cyclopean constructions off Bimini nicely exemplifies the problems of differentiation between submerged geological formations having regular geometrics, and submerged archaeological sites.' In 1980, after studying the road, Marshall McKussick and Eugene Shinn, an anthropologist and a geologist respectively, tersely concluded that 'the persistence of the Bimini island hoax must be explained in sociological rather than geological terms.' To McKusick and Shinn the Bimini controversy is a clash between scientific interpretation and Cayce's predictions regarding Atlantis.

Perhaps the irony of the Bimini controversy is that the stones could indeed be of a geological origin, but might also have been worked on by Man. Beachrock, as mentioned, fractures in a manner resembling the blocks of the road. Perhaps these natural building blocks had been worked on and then arranged by Man. The Bimini road runs straight for more than 2000 feet (610 metres), while no Bimini beachrock is in a straight line for more than 150 feet (45 metres). Also, the blocks of the road are much harder than the soft limestone of currently forming beachrock. In fact the road-stones are so hard that the diamond part of the barrel used to extract rock samples was destroyed after only 12 cores were extracted.

Author John Steele, who took part, as an archaeologist, in two expeditions to Bimini led by Dr David Zink, in 1975 and 1977. The expeditions came to the conclusion that the shape of the structure known as the Bimini road meant that it could not actually have been used as a road, or as a harbour; instead, they suggested, it was a ceremonial site used for religious rites and observation of the stars

Enigmatic structures

Setting aside for a moment the debate on the archaeological or geological origin of the Bimini road and other enigmatic structures discovered since the late 1960s in the Bahamas, Dr Cesare Emiliani of the University of Miami has studied an episode of rapid ice-melting 11,600 years ago. From his investigations, Emiliani postulates that the Laurentide ice-sheet – emanating from the areas around the St Laurence river in Canada and being of greater area than the modern Antarctic ice-sheet – melted 11,600 years ago, sending torrents of water down the Mississippi Valley – so giving rise to the deluge stories found in the legends of many civilisations. He also points out that Plato dated the flood that inundated Atlantis at 9600 BC – 11,600 years ago. If a contour map had been made of the Bahama banks before this flooding, they would form a land mass of 40,000 square miles (100,000 square kilometres). And it is here that Emiliani, a respected geologist, locates the last remnants of Atlantis.

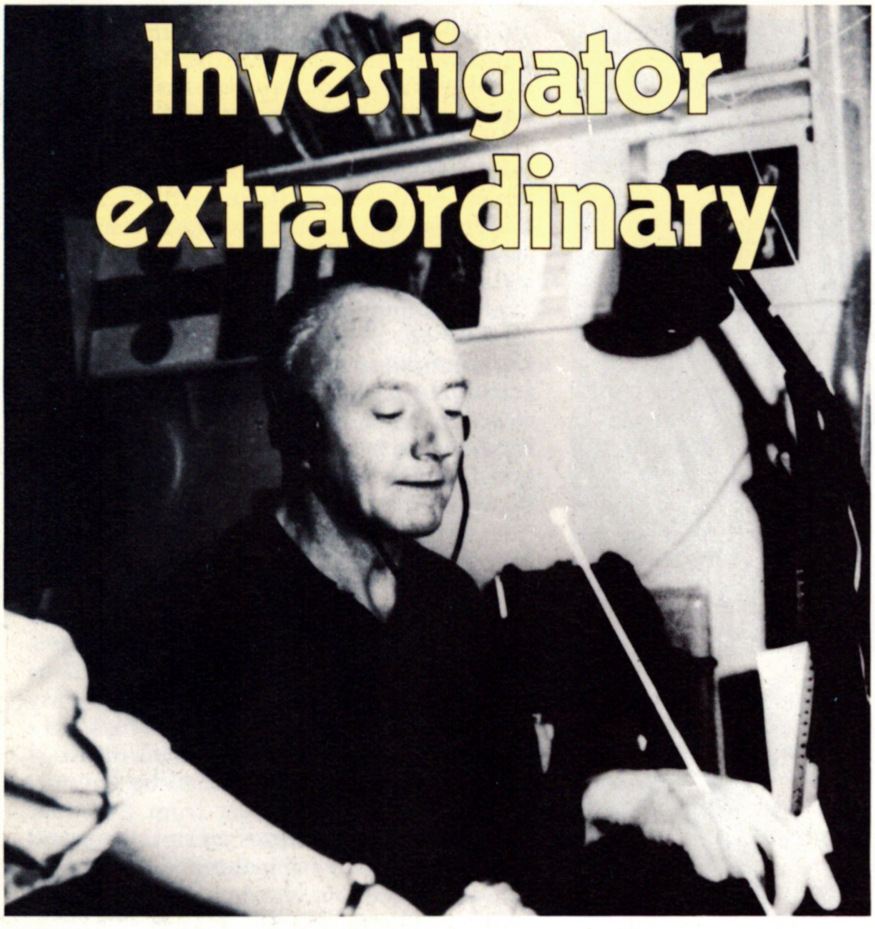
Since 1958, when he first began his photographic surveys, Valentine has observed a curious phenomenon: the sea bottom is rising. Over the years he has discovered perfect rectangles, circles, hexagons and other geometric shapes, all of which stand out against the white sand from which they are emerging because their stones support a lush growth of turtle grass. This phenomenon gives credence to Cayce's prediction that portions of Atlantis would 'begin to rise' – if this oblique interpretation of his words is acceptable – off Bimini in 1968 or 1969.

It is unfortunate that some scientists reject the scientific investigation of this unorthodox idea rather than welcome it as an extension of the boundaries of scientific investigation itself. As more correlations are made between aerial and underwater exploration, unbiased scientific analysis and Cayce's predictions regarding Atlantis, the likelihood is that the Bahamas will become one of the most important archaeological regions of the 20th century.

Further reading

Hugh Lynn Cayce (ed.), *Edgar Cayce on Atlantis*, Howard Baker 1969
Plato, *Timaeus and Critias*, Penguin 1971
David Zink, *The stones of Atlantis*, Prentice Hall 1978

Investigator extraordinary



Benson Herbert is a controversial man. He upset the psychic establishment when, in the 1960s, he set out to investigate the paranormal through the laws of physics. LESLIE PRICE reports on Herbert's work

IN 1966 A SCIENTIST who had for several years been researching into psychokinesis (PK) set up a research laboratory in a remote farmhouse in the New Forest, an area free from traffic vibration and widespread electrical interference, both of which had, in London, previously upset his delicate research instruments.

The newly established Paraphysical Laboratory (or 'Paralab', as it is familiarly called) soon became a controversial centre for paranormal research in Britain. Its director, Benson Herbert, had started his career as a physicist, with an interest in archaeology and mythology. In the years before the Second World War he had carried out a survey of archaeological sites in Britain and Ireland, combining this with a study of haunted castles; he had reached the conclusion that the thick damp walls of ancient buildings served as 'Faraday cages', shutting out radio waves and other electromagnetic waves and creating anomalous electrical phenomena.

A BBC television programme in 1966 showing Herbert and his team investigating the allegedly haunted Sandford Orcas Manor in Dorset resulted in a good deal of publicity for the Paralab's activities, and an invitation for Herbert and his research officer Manfred Cassirer to attend a symposium of psychotronics in Prague in September 1970. The contacts made there with Russian, Czech and other Eastern bloc scientists led to invitations to visit such places as Moscow and Leningrad. Through these meetings with other researchers Herbert and his Paralab became part of the international network of paraphysical research, and he developed particularly strong links with Soviet parapsychologists.

Benson Herbert in his Paraphysical Laboratory (Paralab), which he set up in Wiltshire in 1966, recording the level of electrical energy given off by his subject's right hand

Soviet influence

Soviet parapsychology had attracted a good deal of interest among psychical researchers in the early 1960s. In Britain this was sparked off by the publication of a translation of *Experiments in mental suggestion* (1963) by Professor Leonid Vasiliev of Leningrad University, who had been experimenting with telepathic hypnosis, using subjects in chambers shielded from electromagnetic waves. Then in 1968 Benson Herbert's newly established *Journal of Paraphysics* reported on the international conference on psi held in Moscow in June.

The new journal was viewed balefully by the psychic establishment. Benson Herbert was breaking the rules (as understood in the 1960s) for exploring paranormal phenomena. In the first place, he styled himself a

Without fear or favour

After the Second World War, Benson Herbert took part in experimental seances organised by R.G. Medhurst, a member of the Society for Psychical Research (SPR). After six months the sitters began to experience some vigorous table phenomena, which appeared to be communications from a family of 'controls'. Herbert agreed to be put in an experimental trance; while in the trance he acquired a Chinese 'guide' who claimed to have lived 1000 years ago. However, he assumed that this guide was no more than a projection from his own subconscious. This practical approach to reality was later to make his work particularly acceptable to the East Europeans, whose interpretation of phenomena is essentially materialist.

The fact that Herbert had participated in a seance and experienced physical phenomena did not make him popular with the main body of parapsychologists, who had not had such experiences and were sceptical of psychokinesis (PK). At a time when research into altered states of consciousness had scarcely begun, the fact that he had ignored the boundary between scientist and subject,

paraphysicist. As he said in 1964:

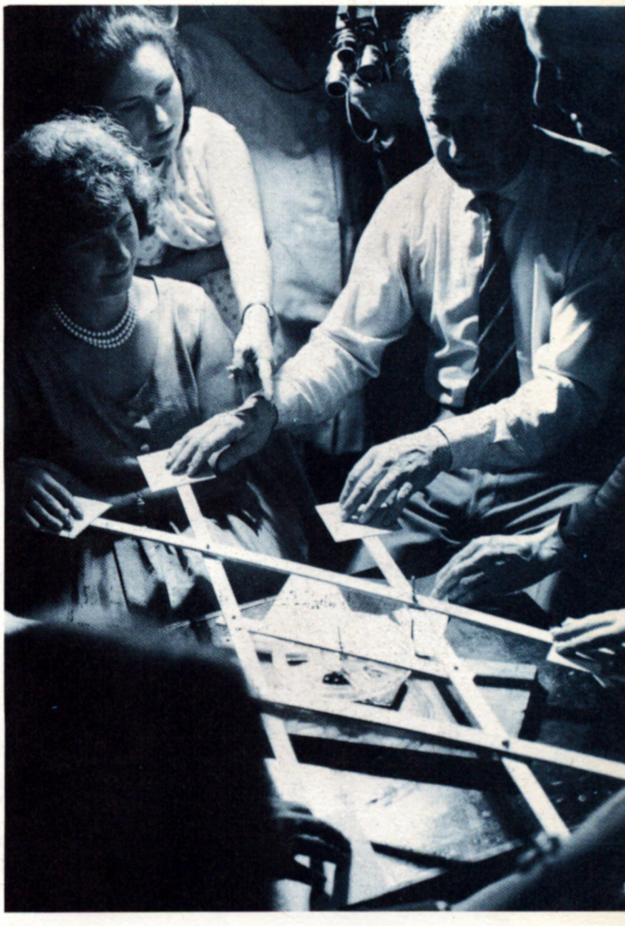
> We are trying to carry out precise and systematic research into the physics of the paranormal. . . . No one knows just how far subconscious dramatisation is involved in purely mental phenomena such as trance.

Statements like this did not endear him to the psychologists, who at that time were the dominant group in psychical research.

A new reality

For Herbert, it had been the work of physicists that had first made him aware of the strange and exciting possibilities in the Universe. At university he had eagerly absorbed Albert Einstein's theory of relativity, Arthur Eddington's theory of the expanding Universe, Karl Heisenberg's principle of indeterminacy, plus the ideas of quantum mechanics and polydimensional geometry. It seemed clear to him that the world was not what it seemed, and that 'our senses were crude and inefficient instruments which created an artificial barrier of illusion between our brains and the mysterious reality outside.'

His first introduction to psi came through science fiction. While still at school he wrote science fiction stories for an American magazine; and it was in the science fiction of H. G. Wells that he met the suggestion that the phenomena of ghosts and poltergeists



Benson Herbert (far right) with members of his group using the 'octo-tron', a device that can supposedly tap a group's subconscious mind. Each participant places his fingers lightly on the square board at the end of one of the eight arms, which usually move quite soon afterwards pointing to the letters of the alphabet spread beneath. It is virtually impossible for any member of the group to dominate the proceedings

The witch Mrs Sybil Leek (seen here with the sceptic Dr Rossell Hope and his wife) who co-operated with Benson Herbert in his investigations into psi

and allowed himself to be put into a trance, was thought quite shocking.

His editorial line in the *Journal of Paraphysics* exacerbated the scandal. 'Are witches psychic?' he asked in an early issue. Answering the question in the affirmative, he said that many witches had a high degree of dissociation, and were therefore suitable subjects for research. He reported on his experiments with a group of witches, who had claimed that by incantation they could make a candle flame flicker at predetermined intervals. He also observed the effects when witches danced outdoors around a fire, and concluded that ESP might be stimulated by the absorption of negative ions through the skin.

'It would appear', he wrote in the journal, 'that witchcraft provided a rich field of research in paraphysics, and we trust that our many witch friends will continue to give their valuable co-operation to facilitate eventual control of the powers which some of them certainly seem to possess.' In 1963 he joined a witch, Mrs Sybil Leek, in a seance at an allegedly haunted building in Southampton and was filmed by the BBC.

Herbert's fraternisation with witches was totally abhorrent to the parapsychologists, who were at pains to distance themselves from such primitive links with the occult. Another group with whom he fraternised were ufologists, equally unpopular in the mid 1960s. In an article on ufology and paraphysics Herbert suggested that 'there is a continuous gradation from the poltergeist-type activity to the UFO-type activity.' By the 1980s this link was accepted by many more students of the paranormal; in 1967 it was still a heresy.

could be explained by postulating extra-spatial dimensions.

Herbert became convinced that a new breakthrough in physics lay in the study of the paranormal, and this was the starting point for his life-long attempt to demonstrate that there is a physical basis to clairvoyance, PK, psychic healing and the curious phenomenon of 'dermo-optics' – or the alleged ability to see through one's skin.

In fact, in the early 1970s the *International Journal of Paraphysics* had concentrated on the Eastern bloc's research along these lines. In July 1972 Herbert met the remarkable Nina Kulagina in Leningrad. She was credited with extraordinary abilities in skin vision and PK, and was reportedly able to move substantial objects either by some kind of gesture or simply by fixing them with her eyes.

On hearing that Herbert was interested in the link between PK and healing Kulagina gripped his left arm. For two minutes he felt nothing. Then, quite abruptly, he 'experienced a new sensation which I described at the time as a kind of "heat", but which now, after much reflection, I believe to be more akin to a mild electric shock.'

A year later, when he visited Kulagina again, he submitted to a repeat experiment in which she held his arm lightly above the wrist: after several minutes he collapsed, concluding, on this occasion, that it was indeed heat that was being transmitted. His arm was so burnt that the marks remained there for the following eight days.

In the *Proceedings* of the SPR (1976) Herbert reported on his experiences with Kalugina and rejected accusations of fraud that had been made against her by James Randi and others.

Top: Benson Herbert with the psychic healer Josephine Blatch, using infra-red equipment at the Paralab

Above left: Sarah Dodd, one of Herbert's investigators, using a device known as 'Rodeo' (rotational dermo-optics). She is wearing an aluminium foil blindfold and rests her left hand on a switch that, as long as it is depressed, keeps the turntable running. When the red card is beneath her outstretched right hand she has to release the switch, stopping the turntable

Above: a tube of haemoglobin is concealed in a box that has 64 compartments. The subject has to determine which one it is in

Another remarkable psychic investigated by Herbert was Suzanne Padfield, the clairvoyant whose ability in psychometry enabled her to identify the killer of a little girl in Moscow, 1700 miles (2736 kilometres) away, when the child's possessions and photograph were put in her hands. In the Paralab an experiment was carried out to determine Miss Padfield's ability to deflect a beam of light.

The experiment involved apparatus that generated a polarised beam of light that could be registered on a metering device. Miss Padfield placed her hands near the tube through which the beam passed, and attempted to affect it. She was able to lower the meter reading a significant number of times – on one occasion, 24 times in succession.

More recent projects at the Paralab have included an investigation into psychic healing, experiments with bacteria and viruses, and the study of dermo-optics (skin vision), including the ability to sense colours and writing through the fingers – which could be of enormous benefit to the blind, and also to those who are colour blind.

continued from back cover

He landed in California near what is now San Francisco. Both he and his crew were received warmly by the local Indians, who took them for gods and offered them the entire country along the Californian seaboard.

According to reports of the voyage, Drake graciously accepted the offer and ordered that a plaque be made, nailed to a post and set up on the shore. The plate announced that the territory was now the domain of Queen Elizabeth and would henceforth be called New Albion.

Nothing had been heard of the plate until Shinn's picnic. Experts denounced it as a forgery and pointed out that contemporary reports stated that Drake landed at a spot marked by 'white banks and cliffs': however, there were none at the picnic site.

The date on the plaque was also hard to explain. Reports said that Drake had landed on 17 June but that the Indians had not given up the territory until 26 June.

Analysis of the metal used in the plate showed it to have a higher zinc content than was usual in the 16th century. Tests on the surface revealed a high carbon content – indicating that it could have been fired, possibly to make it appear older than it really was.

The main criticism about the plaque's authenticity concerned the lettering and words on it. The letters were all Roman, such as those used by Elizabethan scholars – in preference to the more common, ornamental Tudor writing. Moreover, the spelling was suspiciously consistent at a time when it often varied from page to page. The engraver had also used the modern spelling of words that, in the 16th century, were more often spelt 'Yngland', 'Kyng', 'Quene' and 'yt' (it). Also, the spelling 'herr' (for her) did not exist in the 16th century. Dr Bolton was, however, able to answer his critics point by point.

As to the date shown on the plate, he said that accounts of the voyage clearly stated it was engraved on 'the day and yeare of our arrival'; the fact that the Indians did not formally give up the territory until nine days later did not affect claims for the plaque's authenticity.

Moreover, he argued that analysis of the brass proved that it did date from the 16th century and that it was covered with a naturally acquired coating 'formed over many years'. Plant cells and jagged holes were 'undoubtedly mineralised'; this could have happened only if the plaque had been in the open for a considerable time.

Dr Bolton's report concluded: 'Each individual groove of the lettering was examined under a microscope . . . because, in the case of fraud, there is always a chance of finding a hidden area which would disclose a fresh, corrosion-free surface . . . . No indication or clue to artificial patination [incrustation] of any kind was found.'

Dr Bolton's supporters countered the argument that the spelling of some words on the plate was too modern by suggesting there might have been scholars on board with Sir Francis, or at least books from which Roman script could have been copied. The uniform spelling, they argued, was not unreasonable over such a short text and they maintained that the 'modern' spellings were, in fact, current at that time.

It was even discovered that Drake had in fact used the spelling 'herr' before. The only criticism left unanswered seemed to be Drake's landing site – near white cliffs and banks. Then something surprising happened.

A Chinese Drake?

A chauffeur, William Caldeira, had read of the plate's discovery; he came forward and claimed to have found it some years earlier at a place called Laguna Beach. He stated that he found a brass plaque under a clod of earth, with what he took to be a Chinese inscription, although he was able to make out the word 'Drake' in English. He too had kept it for possible car repairs, but threw it away some months later near where Beryl Shinn found it.

Laguna Beach is in an area known as Drake's Bay, which is surrounded by white cliffs, and is traditionally accepted as his landing site.

Sceptics may argue that Caldeira's story is too convenient. Why, once he had recognised the word 'Drake' on the plaque, did he not have it examined? On the other hand, if the whole incident was a hoax, why was the plaque not left at the correct site, which would have been rather less suspicious?

The strangest part of Caldeira's story is that, having found it on a beach and then taken it home, he did not throw it away in a rubbish bin but on a beach. Also, why did Drake nail it to a post on a beach – surely not the most permanent site for such an important declaration?

The analysis of the brass used is somewhat doubtful; the first analysis revealed too high a zinc content for the 16th century, yet the second states that it is 'ancient'. A third independent appraisal could have resolved the issue – but has never been made.

Britain's 'title deed' to the state now rests in the University of California. But so far the British government seem, rather generously, not to have taken up their option.

California here we come

Does a brass plate, found in San Francisco, really prove that California was annexed for Britain by Sir Francis Drake in 1579? The evidence seems tempting – but, as ARTHUR DAVENPORT explains, even the experts are puzzled by this extraordinary case

The plaque was found by Mr Beryl Shinn, a San Francisco shop assistant, while on a picnic in 1936. He was on the north shore of the Golden Gate Bridge when he found it under a rock. Thinking it might come in useful for car repairs, he took it home.

The plaque lay in Mr Shinn's garage for about eight months, and then eventually he decided to clean it up with soap and water. It measured 8 inches by 5 inches (20 centimetres by 12.5 centimetres) and was covered in writing that had been scratched on its surface. The word 'Drake' could just be made out.

Shinn sent the plate to Dr Herbert Bolton, of the University of California, who deciphered the inscription:

BEE IT KNOWNE VNTO ALL MEN
BY THESE PRESENT
IVNE 17 1579
BY THE GRACE OF GOD IN THE NAME
OF HERR MAIESTY QVEEN ELIZABETH OF
ENGLAND AND HERR SVCCESSORS FOREVER
I TAKE POSSESSION OF THIS KINGDOME
WHOSE KING AND PEOPLE FREELY RESIGNE
THEIR RIGHT AND TITLE IN THE WHOLE
LAND VNTO HERR MAIESTIES KEEPEING NOW
NAMED BY ME AND TOO BE KNOWNE VNTO
ALL MEN AS NOVA ALBION
FRANCIS DRAKE

Shortly afterwards Dr Bolton announced to a surprised California Historical Society: 'Here it is. Recovered at last after a lapse of 357 years. Behold, Drake's plate – the plate of brass. California's choicest archaeological treasure!'

But it was not to be as simple as that. The discovery of the plate was to start an international argument involving American historians, metallurgists, English scholars and antiquarians.

It is known that Sir Francis Drake visited California in 1579, during his round-the-world voyage. He was being pursued by the Spanish and sailed round Cape Horn and into the Pacific hoping to reach the fabled Northwest Passage, which links the Atlantic and Pacific oceans.

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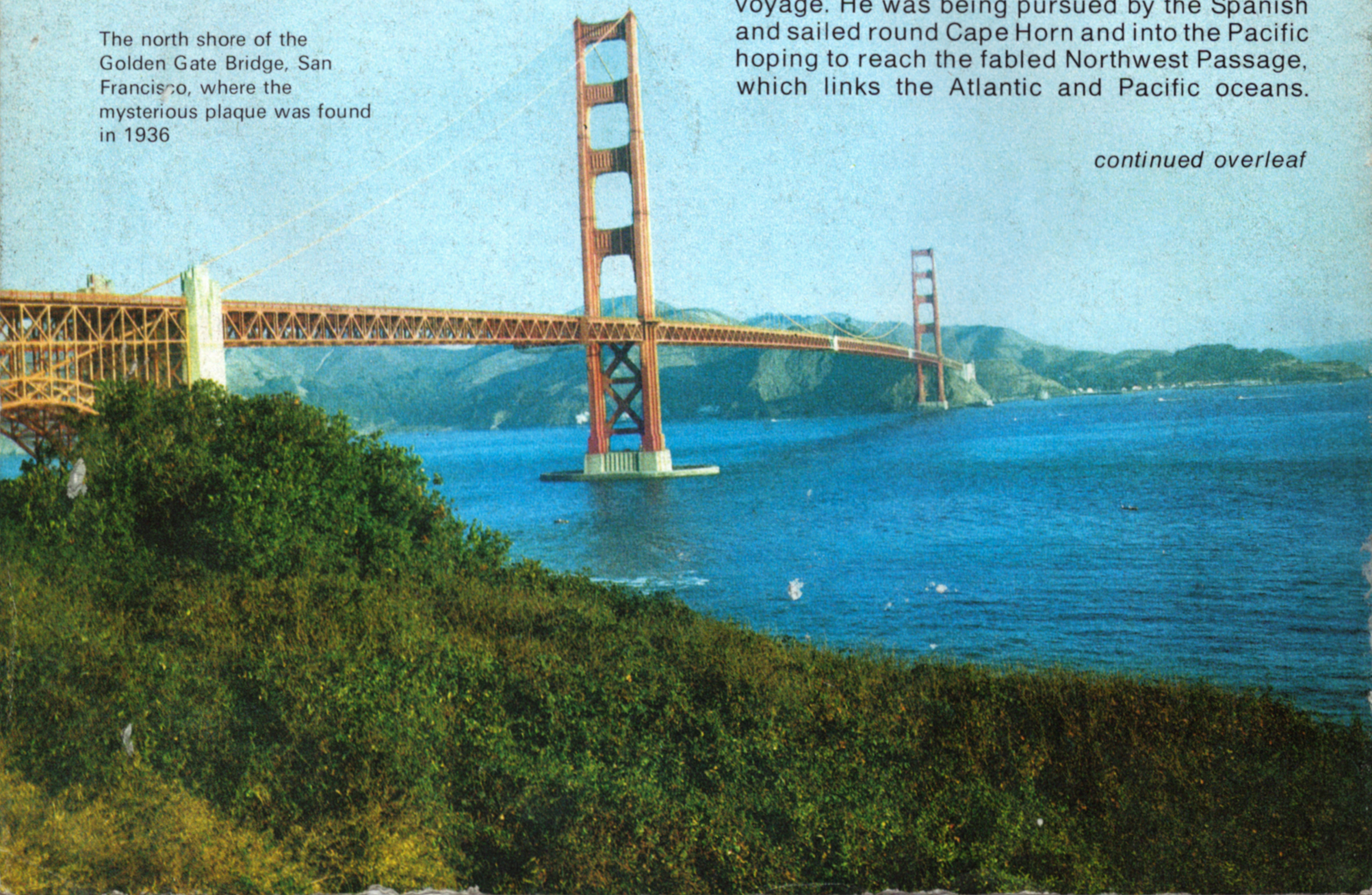

The north shore of the Golden Gate Bridge, San Francisco, where the mysterious plaque was found in 1936